Muhammad Ahmad Bashir (Curriculum Vitae)

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Research Interests

My current research focuses on **web/mobile security & privacy**. In particular, I am studying the **online advertising** ecosystem to understand how it impacts users' privacy. My goal is to make the online advertising ecosystem more transparent to enable users make informed decisions regarding their personal information. I have previously worked on projects aimed at **limiting abuse** on online services such as Facebook and Twitter.

Education

Doctor of Philosophy in Computer Science — Aug 2014 – Aug 2019
Northeastern University

Bachelor of Science in Computer Science — Sep 2008 – May 2012
LUMS School of Science and Engineering

Employment History

1. Postdoctoral Research Fellow **(ICSI, Berkeley)** — Oct 2019 – Present
2. Graduate Research Assistant **(Northeastern University)** — Sep 2014 – Aug 2019
3. Research Intern **(ICSI, Berkeley)** — Summer 2018
4. Security Engineering Intern **(Threat Infrastructure, Facebook Inc.)** — Summer 2017
5. Security Engineering Intern **(Online Safety, Facebook Inc.)** — Summer 2016
6. Research Intern **(Max Planck Institute, SWS)** — Oct 2012 – Jan 2013
7. Research Assistant **(LUMS-SSE)** — Jun 2011– Sep 2011/ Feb 2013– Jul 2013

Honors and Awards

1. Best Stupent Paper Award **(FPF Privacy Papers for Policymakers)** — 2018
2. Best Paper Award **(COSN '15)** — 2015
3. Best Paper Award **(SECRYPT '15)** — 2015
4. Research Intern Fellowship **(Max Planck Institute for Software Systems)** — 2012
5. Winner, Ericsson – PTA Mobile Excellence Award **(National award)** — 2011
6. Winner, SOFTEC **(National award)** — 2011

Teaching Experience

1. Teaching Assistant **(CS 3700 - Networks and Distributed Systems)** — Fall 2018
2. Teaching Assistant / Guest Lecturer **(CS 2550 - Foundations of Cybersecurity)** — Spring 2018
3. Teaching Assistant **(CS 585: Service Oriented Computing)** — Spring 2013
4. Teaching Assistant **(CS 582: Distributed Systems)** — Fall 2012
5. Teaching Assistant **(CS 380: Databases)** — Spring 2012

Selected Publications

1. **A Longitudinal Analysis of the ads.txt Standard** (IMC '19)
   - A 15-month long study analyzing the adoption of the `ads.txt` standard by Alexa-100K websites.
2. **Quantity vs. Quality: Evaluating User Interest Profiles Using Ad Preference Managers** (NDSS '19)
   - First large-scale study of the "interests" inferred by ad networks using Ad Preference Managers.
   - We investigate how these interests were inferred and how useful they were according to the users.
3. **How Tracking Companies Circumvented Ad Blockers Using WebSockets** (IMC '18 & ConPro '18')
   - A study of 100,000 websites to investigate how some tracking companies leveraged a bug in the `webRequest` API to circumvent blocking extensions for tracking and serving ads using WebSockets.
4. **Diffusion of User Tracking Data in the Online Advertising Ecosystem** (PETS '18)
   [FPF Privacy Papers for Policy Makers Award]
   - We model how user tracking data propagates in the advertising ecosystem because of RTB.
   - We model the efficacy of ad and tracker blocking extensions at protecting users' privacy.
5. **Recommended For You: A First Look at Content Recommendation Networks** (IMC '16)
   - First look at how content (ads and recommendations) is served by Content Recommendation Networks.
   - This study highlights the inconsistencies in how the content is served and calls for stronger regulations.
6. **Tracing Information Flows Between Ad Exchanges Using Retargeted Ads** (USENIX Security '16)
   - We detect information sharing among ad exchanges using a generic technique involving retargeted ads.
   - This study detects 31% of cookie matching partners which were missed by prior methods.
7. **Strength in Numbers: Robust Tamper Detection in Crowd Computations** (COSN '15) **[Best Paper]**
   - Detection of large-scale (Sybil-tampered) crowd computations in Online Social Networks.
   - Dataset consists of roughly 300M Twitter users and 30K businesses with 341K reviews from Yelp.
8. **Towards Detecting Anomalous User Behavior in Online Social Networks** (USENIX Security '14)
   - Detection of anomalous identities, using PCA, on Facebook used in diverse attack strategies.

Ongoing Work

1. **Cross Device Tracking**
   - A comprehensie study of the state of cross-device tracking and the underlying mechanisms used.
   - High-level idea is to construct several personas, perform browsing, and solicit ads on other devices.
2. **SDKs & Android Permissions**
   - A methodological way of examining which SDK requested which Android perimssion.

Technical Skills

Languagues: Python, Java, Hack, C++, Javascript, SQL, HTML, PHP
Tools: Spark, Weka, Matlab, BPEL
Platforms: Linux, Windows, Mac OS X

References

Available upon request